

Biomass Resources in California

Integrated Energy Policy Report Workshop
9 May 2005

California Biomass Collaborative
California Energy Commission--PIER Renewables
California Department of Forestry and Fire Protection





Estimating Biomass Resources

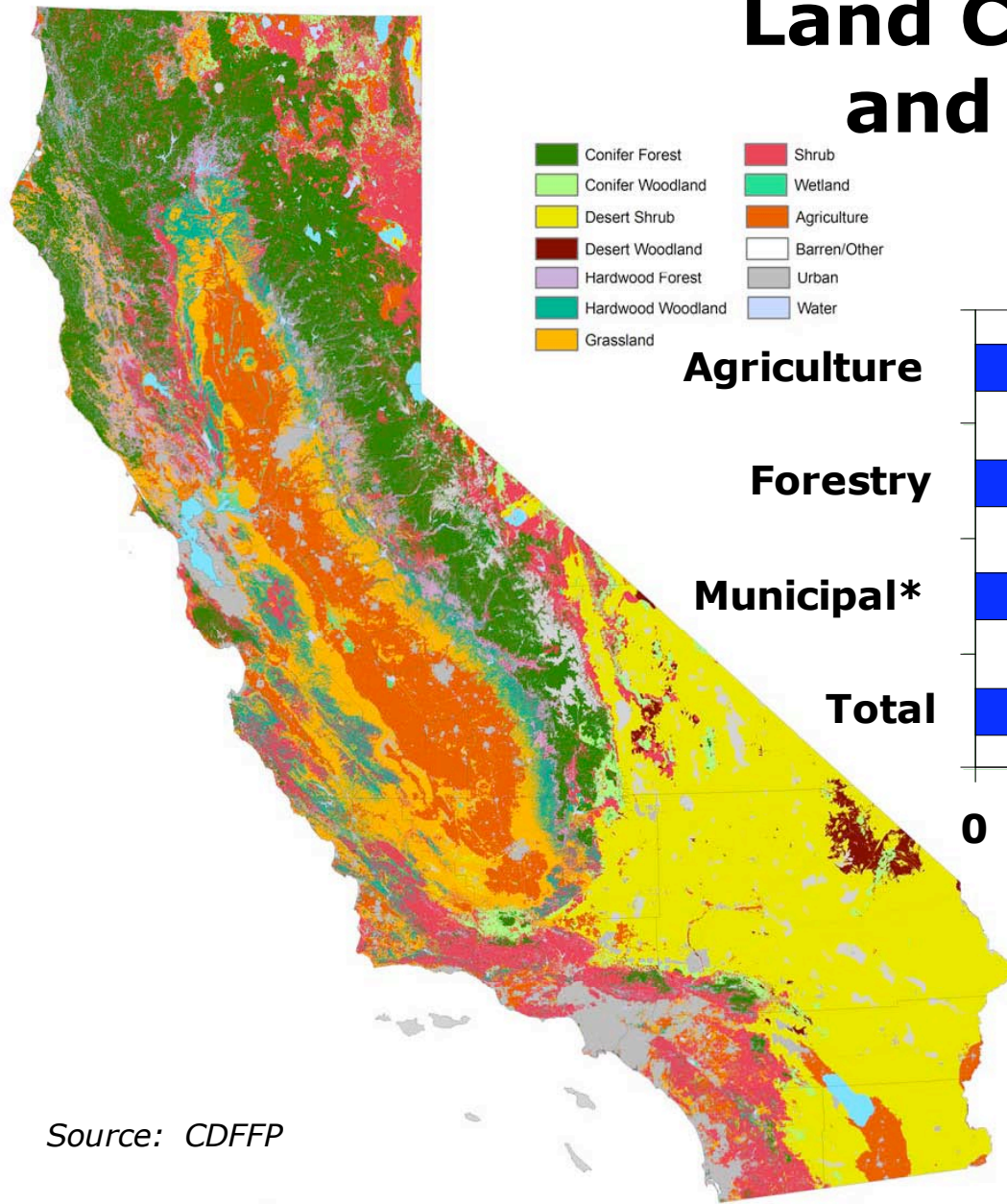
- Primary Resource Categories:
 - Agriculture
 - Forestry
 - Municipal Solid Waste
 - Dedicated Crops (future)
- Annual resource production and availability
 - Gross production
 - Technical availability
- Projections to 2017



Estimating Biomass Resources

- Crop yield factors applied to CASS/NASS county acreage data
- Standard manure production data applied to county animal populations
- Food processing surveys and CASS/NASS production data
- Forest estimates from CDFFP
- CIWMB and CEC data for MSW and LFGTE
- USEPA data for WWTP

Land Cover Classification and Biomass Resource

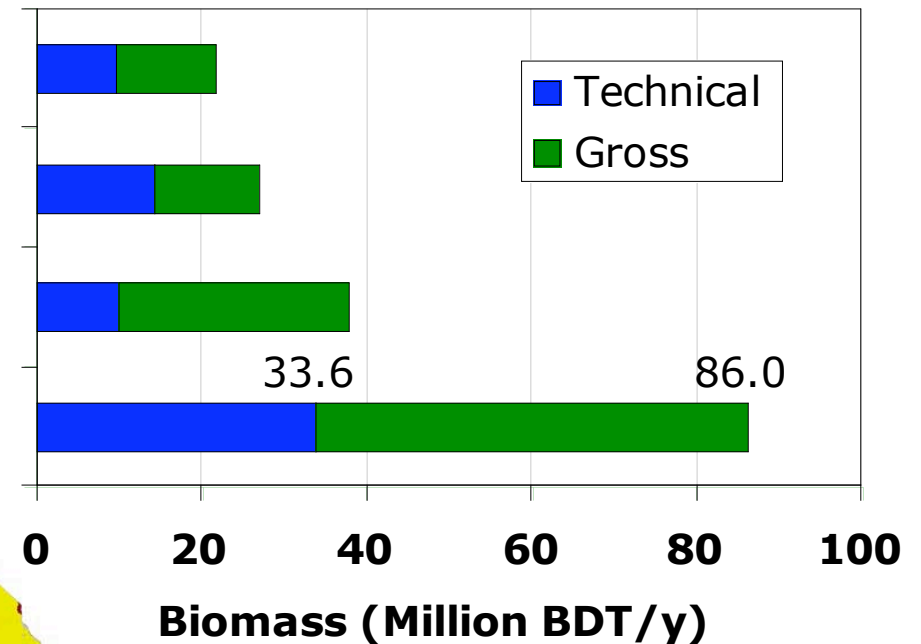


Agriculture

Forestry

Municipal*

Total



*** + 134 BCF/year landfill and digester gas**

Source: CDFFP

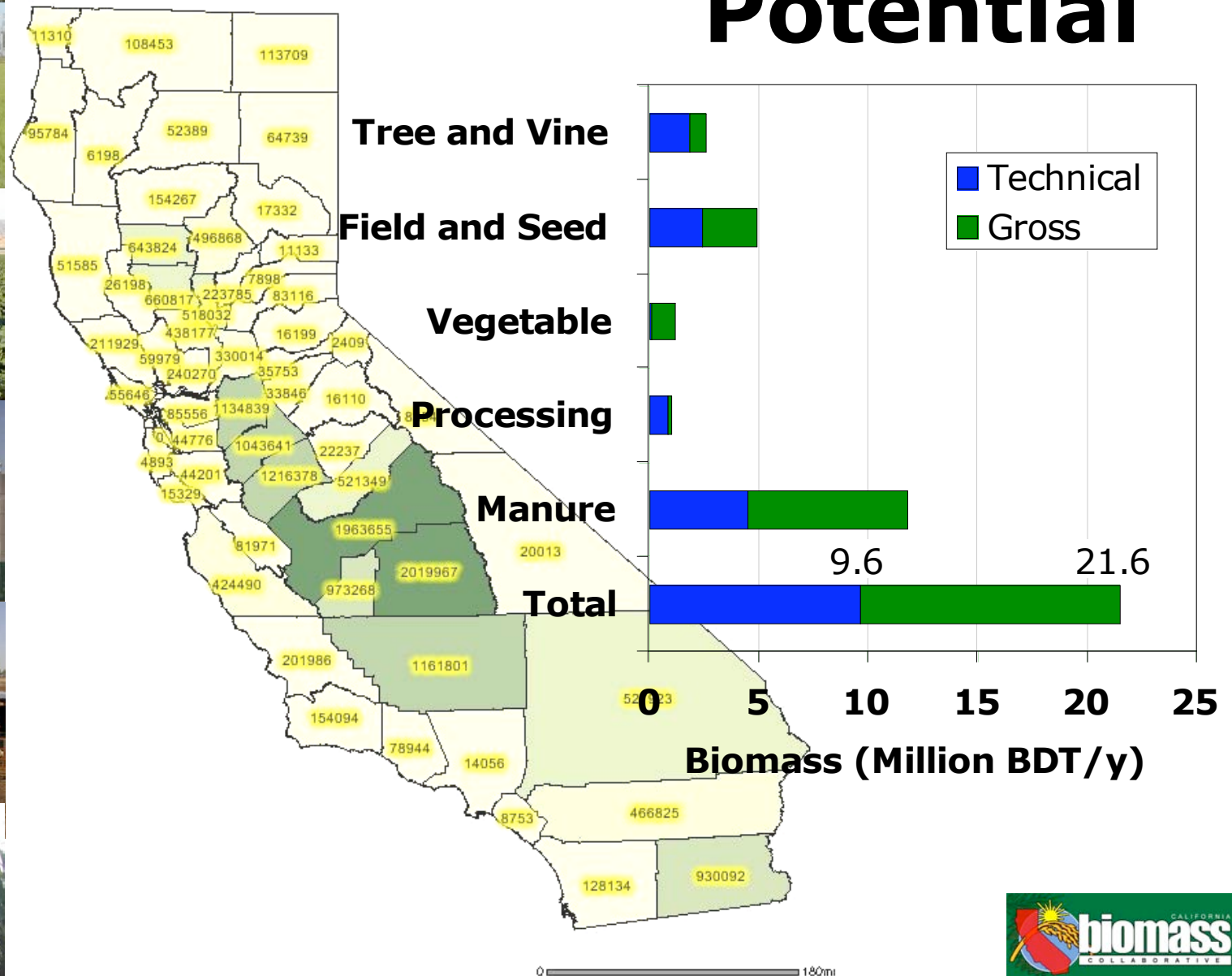


0 50 100 150 Miles

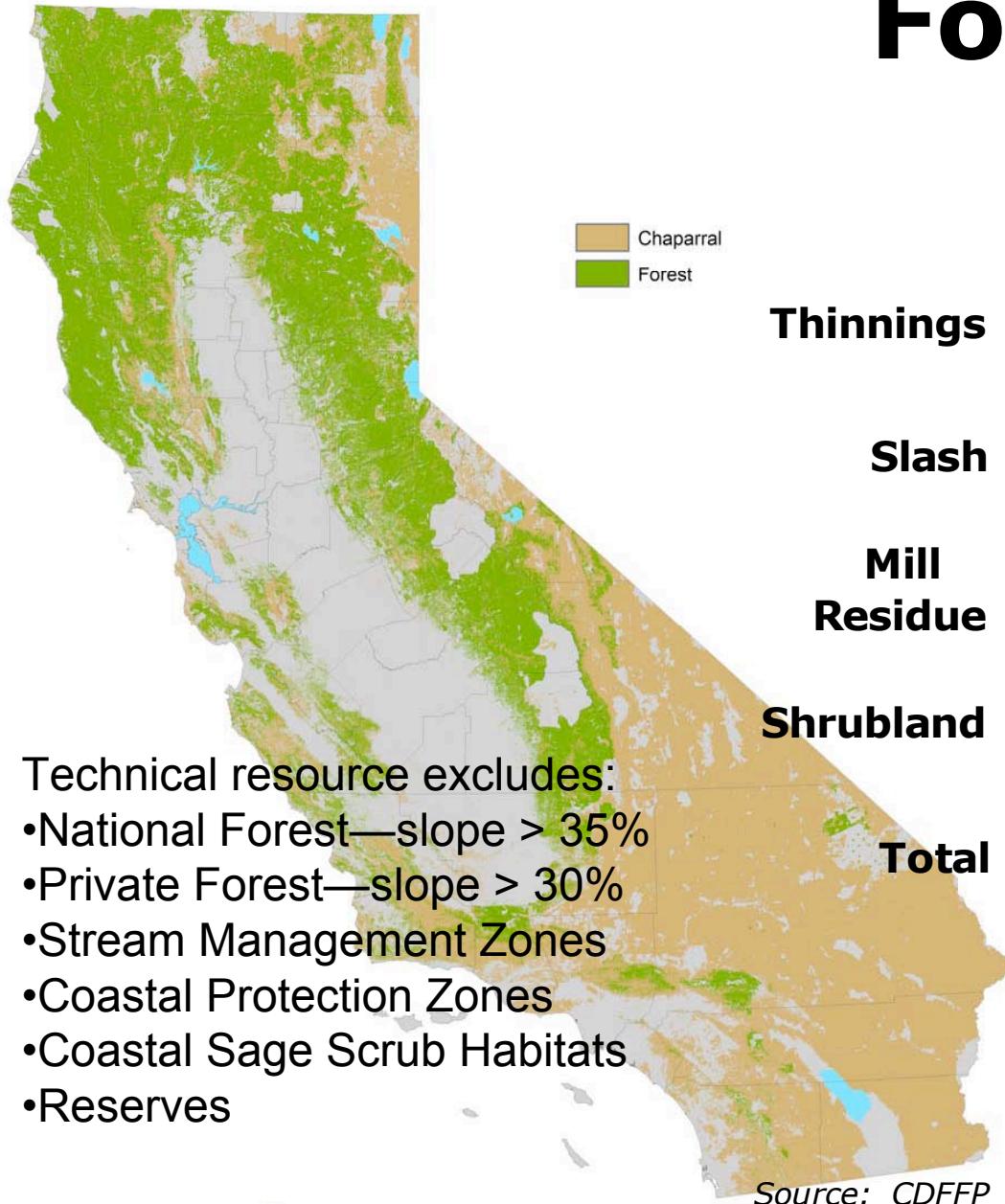
Data Sources:
FRAP Multi-Source Land Cover Data, v02_2



Agricultural Biomass Potential



Forest Biomass Potential



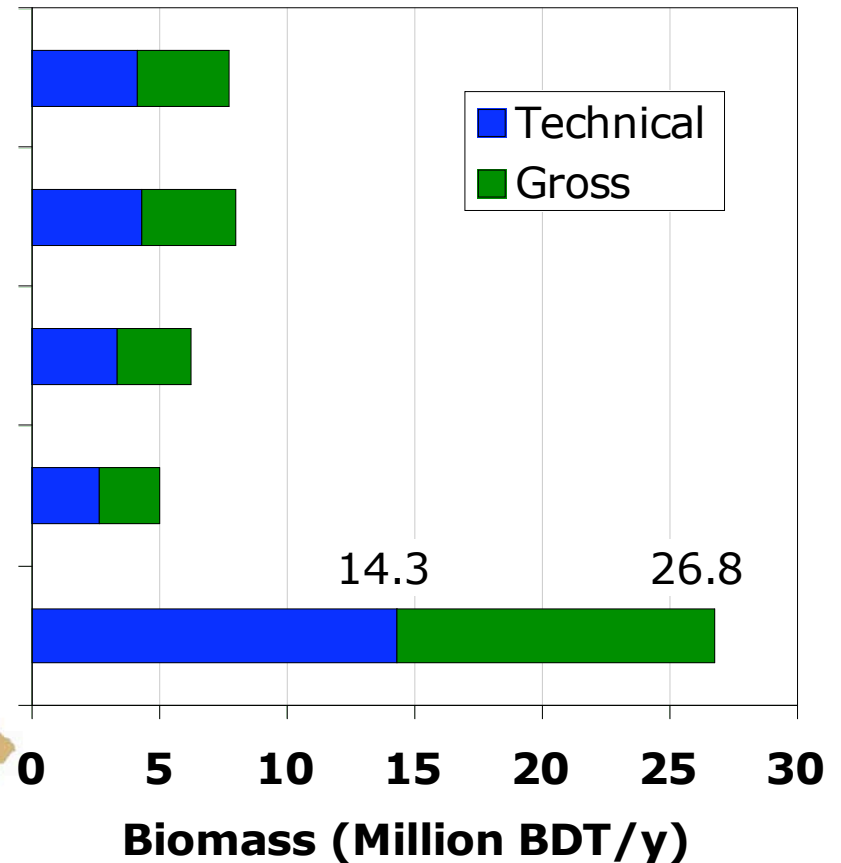
Thinnings

Slash

**Mill
Residue**

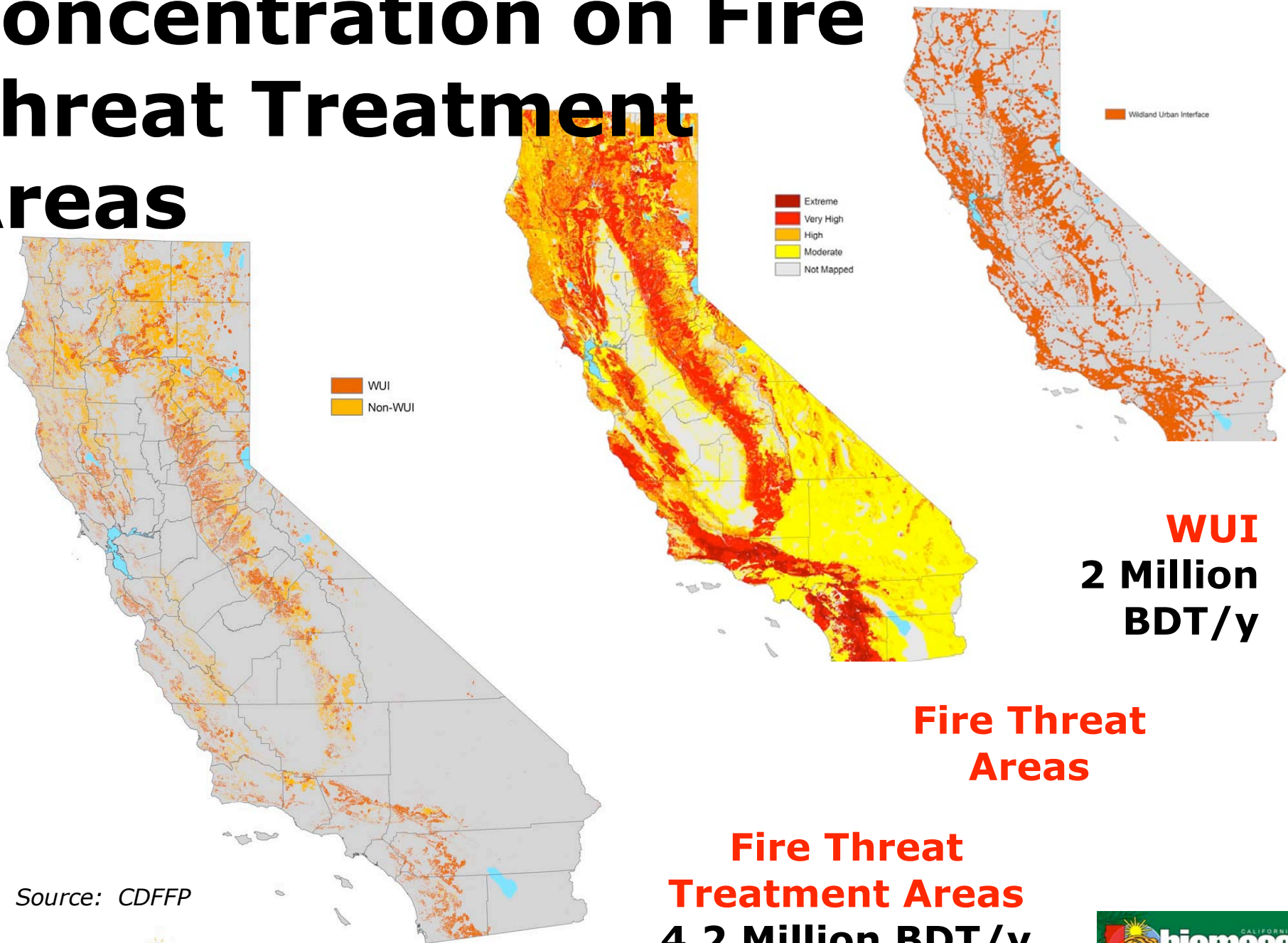
Shrubland

Total



1.3 Billion BDT standing non-merchantable biomass

Concentration on Fire Threat Treatment Areas



Source: CDFFP

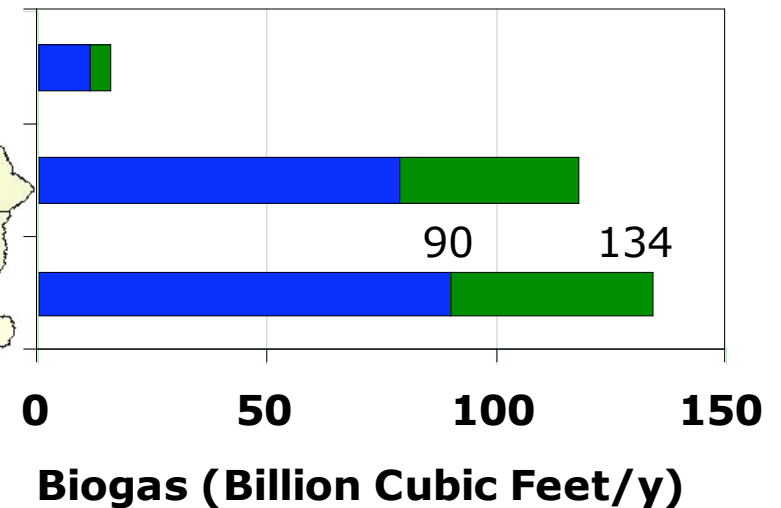
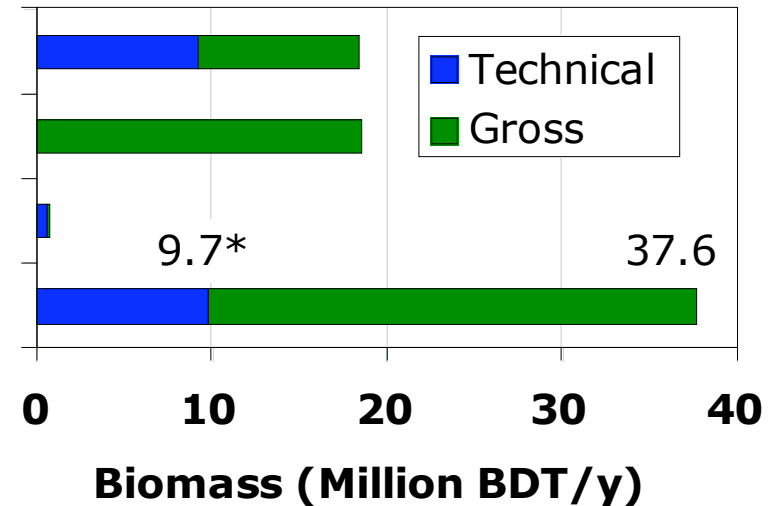
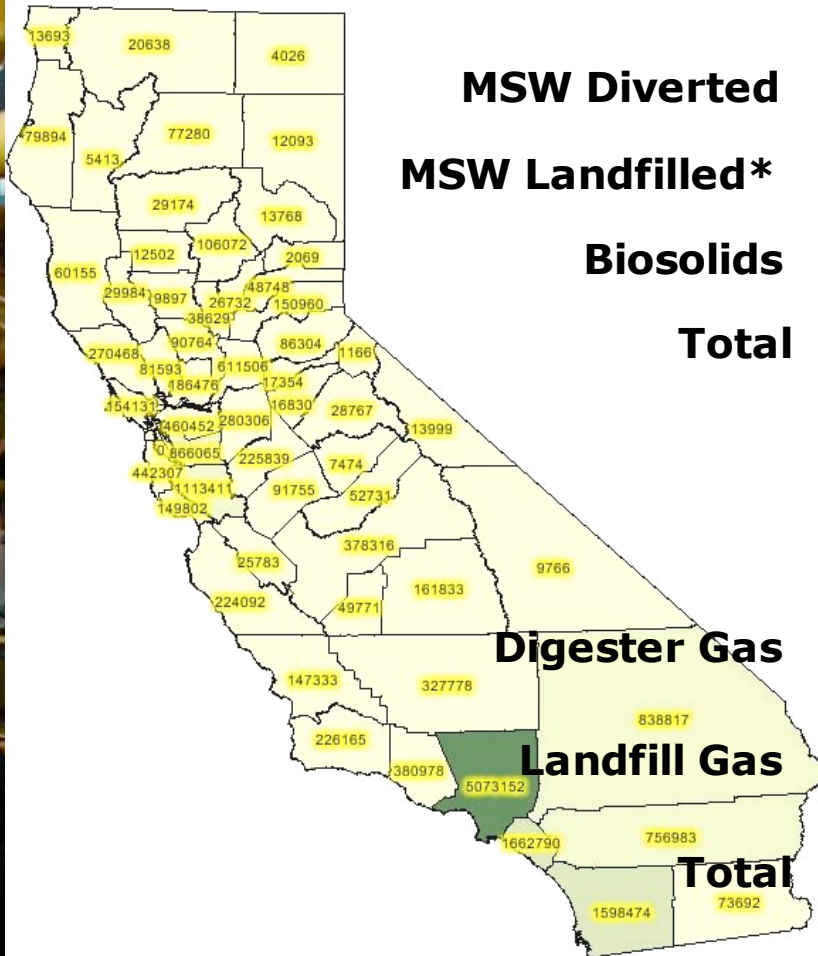


0 50 100 150 Miles

Data Sources:
FRAP Wildland Urban Interface (WUI), v03_1



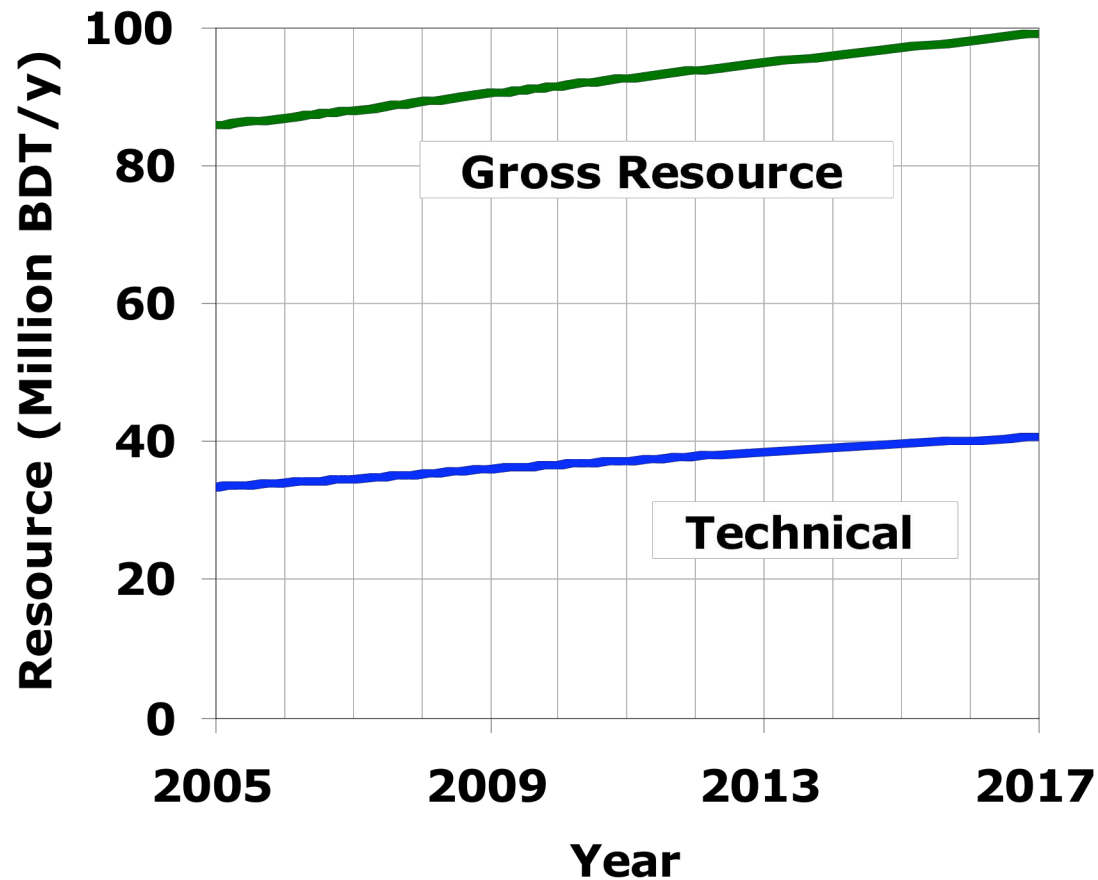
Municipal Biomass Potential



*Technical included in LFG
1 Billion tons waste in place

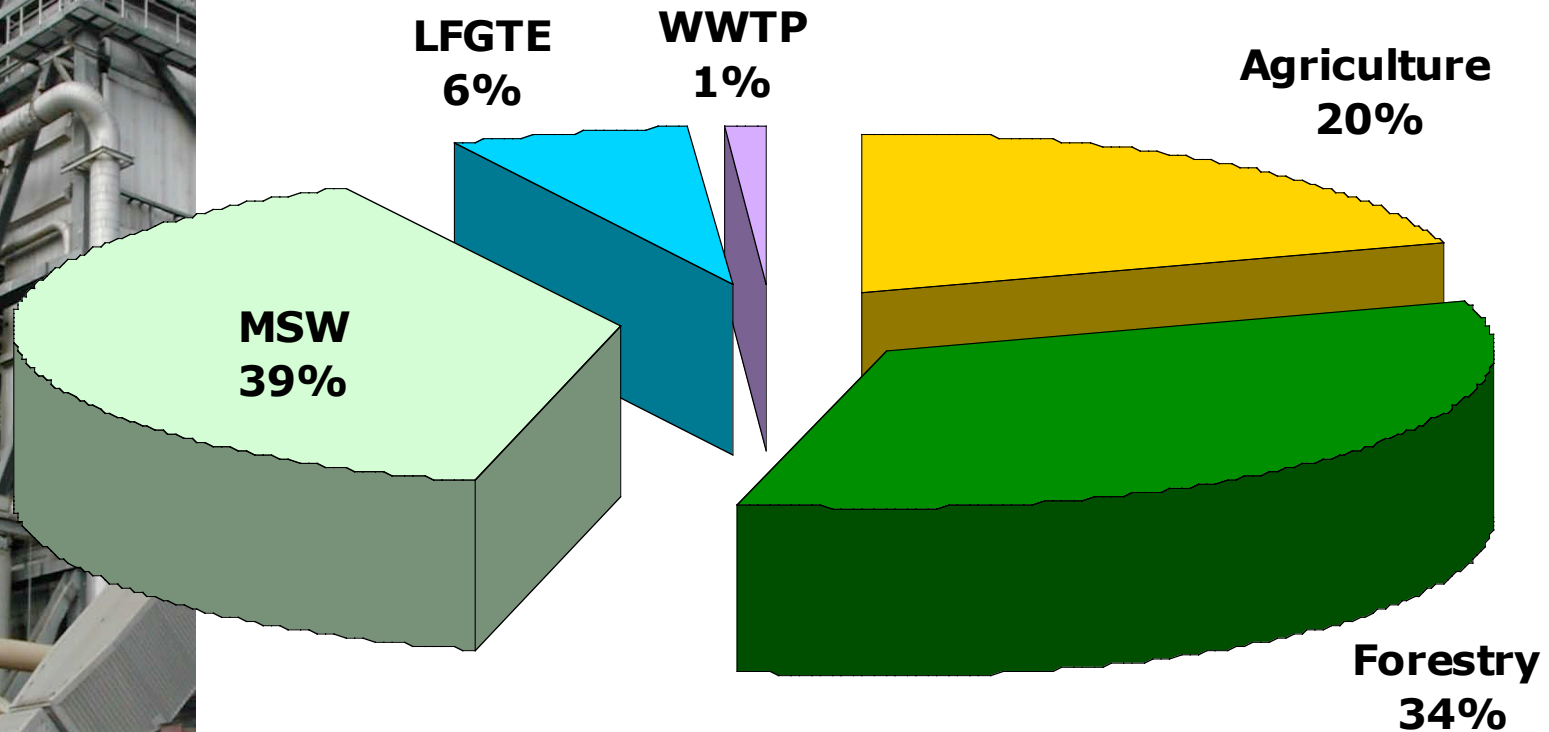


Resource Projections Through 2017



- Population Growth
- Possible dedicated crop additions

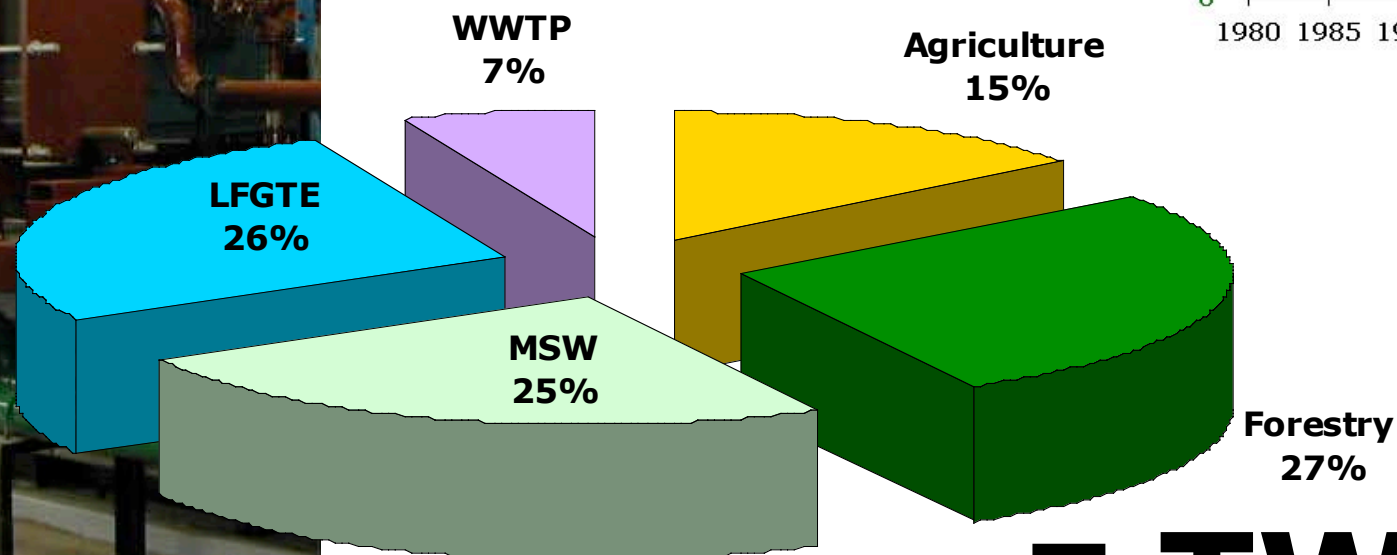
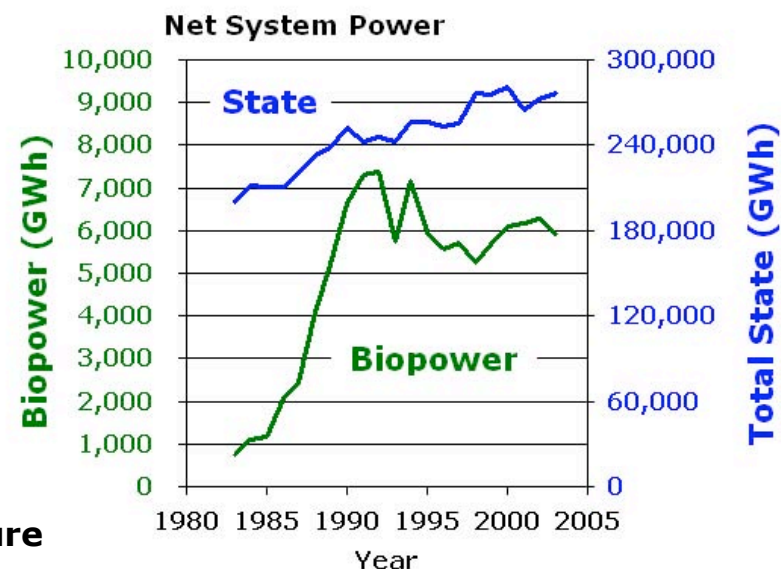
Gross Potential Electrical Energy from Biomass in California, 2005



80 TWh
10,700 MW

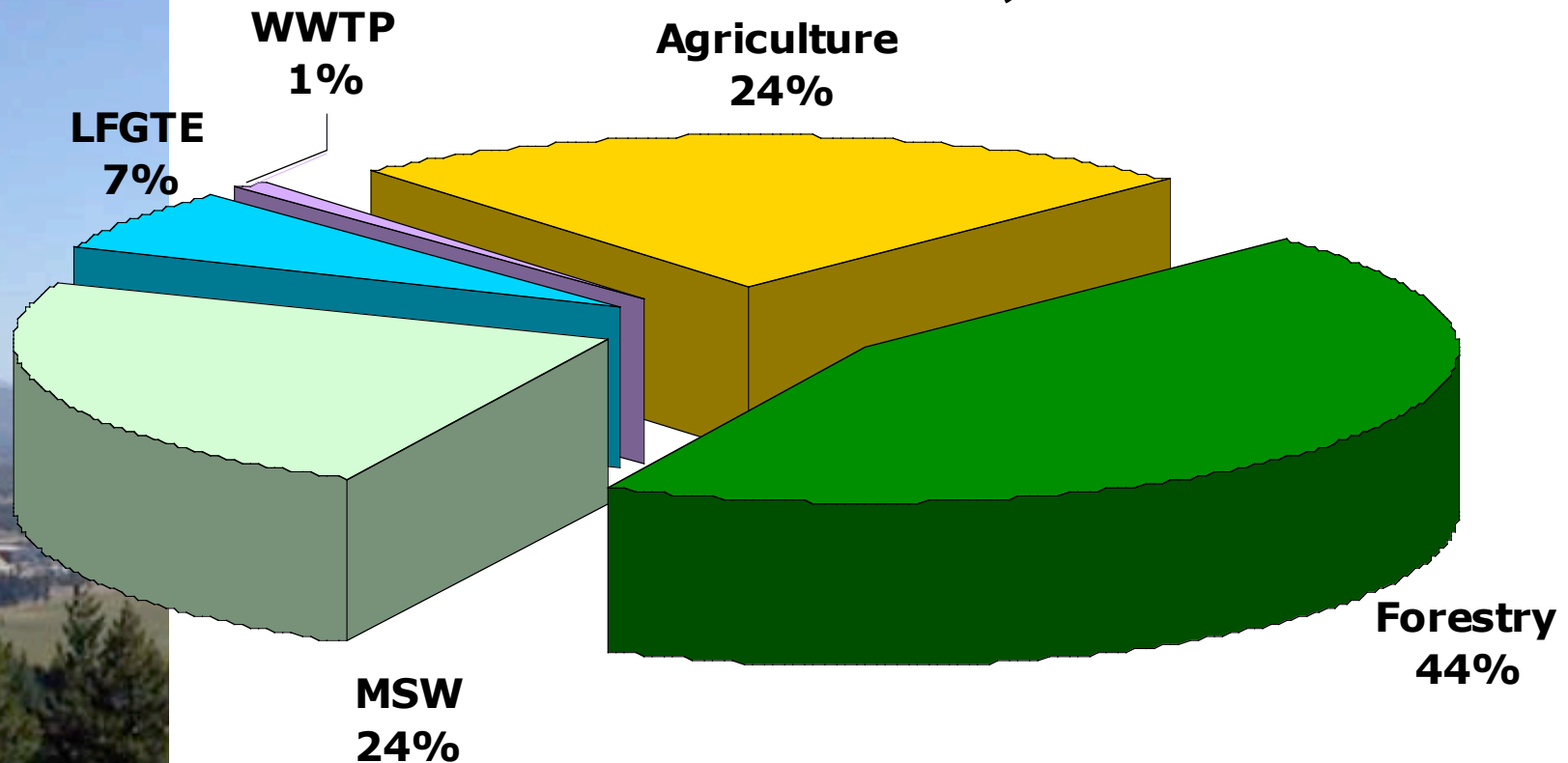
Existing and Planned Generation-2005

Resource	MWe	GWh
Agriculture	141	1,051
Forestry	268	1,996
MSW	239	1,780
LFGTE	258	1,921
WWTP	63	469
Total	969	7,216



7 TWh

Net Technical Electrical Energy Potential from Biomass in California, 2005



27 TWh
3,700 MW



Potential Generating Capacity from Biomass in California 2005-2017

